

**What is claimed is:**

1        1. An automatic adjustment system for source current  
2 and sink current mismatch, comprising:

3        a startup compensation/setup device, to perform  
4              initialization current compensation and  
5              accordingly implement a control reference table;

6        a determination device, connected to the startup  
7              compensation/setup device through a second switch,  
8              to output a control signal according to the  
9              control reference table; and

10      a current compensation device, connected to the startup  
11              compensation/setup device through a first switch  
12              and to the determination device, to switch  
13              corresponding internal switches on and off  
14              according to the control signal and complete the  
15              desired compensation when the source current is  
16              the same as the sink current.

1        2. The automatic adjustment system according to claim  
2        1, wherein the first switch has a closed state during the  
3        initialization current compensation and an opened state  
4        after the initialization current compensation completed.

1        3. The automatic adjustment system according to claim  
2        1, further comprising:

3        a transmission line, connecting the current  
4              compensation device to the startup  
5              compensation/setup device;

6        a series of at least one first constant current source  
7                and at least one third switch, one end of the  
8                series connected to the transmission line and the  
9                other end connected to a positive voltage source;  
10      a series of at least one second constant current source  
11                and at least one fourth switch, one end of the  
12                series connected to the transmission line and the  
13                other end connected to a ground voltage.

1        4. The automatic adjustment system according to claim  
2        1, wherein the startup compensation/setup device comprises a  
3        detecting resistor, an amplifier with negative terminal  
4        connected to the detecting resistor, an analog-to-digital  
5        converter connected in series to the amplifier, and a logic  
6        controller connected in series to the analog-to-digital  
7        converter.

1        5. The automatic adjustment system according to claim  
2        1, wherein the determination device consists of a bandgap  
3        reference circuit, a comparator with negative terminal  
4        connected to the bandgap reference circuit, and a selector  
5        with two input terminals respectively connected to the  
6        comparator and the second switch and output terminal  
7        connected to the current compensation device.

1        6. An automatic adjustment system for source current  
2        and sink current mismatch, comprising:

3        a first compensation unit, having multiple circuits,  
4                each consisting of a first constant current source  
5                and a first compensation switch in which, for  
6                source current compensation, an input of the first

7           constant current source is connected to a positive  
8           voltage source and an open terminal of the first  
9           compensation switch is connected to a transmission  
10          line;

11          a second compensation unit, having multiple circuits,  
12           each consisting of a second constant current  
13           source and a second compensation switch in which,  
14           for sink current compensation, an output of the  
15           second constant current source is connected to a  
16           ground voltage and an open terminal of the second  
17           compensation switch is connected to the  
18           transmission line, wherein the first and second  
19           compensation units form a railing configuration;

20          a first switch, having a joint terminal connected to  
21           the transmission line and an open terminal to be  
22           connected to the joint terminal to form a pathway  
23           when initialized and to be disconnected to the  
24           joint terminal to form an open circuit after  
25           initialization;

26          a detecting resistor, connected to the open terminal of  
27           the first switch, to detect source current and  
28           sink current mismatch;

29          an amplifier, having a positive input terminal, a  
30           negative input terminal, a first output terminal  
31           and a second output terminal, the positive input  
32           terminal connected to the open terminal of the  
33           first switch, the negative input terminal  
34           connected to a free end of the detecting resistor  
35           to compare current difference between two ends of  
36           the detecting resistor, wherein the largest and

37               smallest differences are respectively output  
38               through the first and second output terminals;  
39               an analog-to-digital converter, connected to the first  
40               and second output terminals of the amplifier, to  
41               convert the largest and smallest differences from  
42               analog to digital;  
43               a logic controller, connected to the analog-to-digital  
44               converter, to set up a control reference table  
45               according to the largest and smallest differences  
46               for required current compensation reference;  
47               a second switch, having an open terminal and a joint  
48               terminal connected to the logic controller; and  
49               a selector, connected to the open terminal of the  
50               second switch, to output a control signal  
51               according to the control reference table and a  
52               comparison value after the second switch is closed  
53               such that one or more circuits in the first or  
54               second compensation unit are turned on, thereby  
55               automatically performing current compensation to  
56               produce source current and sink current matching.

1               7. The automatic adjustment system according to claim  
2       6, further comprising a low pass filter, connected to the  
3       transmission line and the joint terminal of the first  
4       switch, to filter unwanted signals and thus generate an  
5       output voltage.

1               8. The automatic adjustment system according to claim  
2       7, wherein the selector further comprises a comparator,  
3       connected to the low pass filter, to receive the output  
4       voltage from the low pass filter, compare it to a reference

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5 voltage from an external bandgap reference circuit, and  
6 generate the comparison value.